WHAT IS CLAIMED IS:

1. A method for determining a reference speed approximating a ground speed of a vehicle having a plurality of powered axles each having at least one wheel which is subject to creep relative to the ground as the vehicle is propelled, the method comprising:

selecting a measured speed indicative of the vehicle speed from the axle of said plurality of axles having the lowest speed;

determining the axle of said plurality of axles having a predetermined amount of creep and designating said axle as a speed axle;

determining a derived speed for said speed axle;

calculating a creep value for said speed axle;

compensating said derived speed by subtracting a creep value from said derived speed to obtain a corrected speed indicative of the vehicle speed;

determining operating dynamics for the vehicle; and

generating the reference speed based on one of said measured speed or said corrected speed, in response to said operating dynamics.

2. The method of claim 1 wherein the creep value is determined based on a change in torque on the speed axle.

3. The method of claim 1 wherein the creep value is limited to a selected value.

4. The method of claim 1 wherein said generating the reference speed includes selecting one of said measured speed and said corrected speed to define an adjusted speed, said reference speed being determined based on the adjusted speed.

5. The method of claim 4 further comprising determining a raw reference speed by applying a lower limit and an upper limit to the adjusted speed to define a raw reference speed.

6. The method of claim 5 further comprising determining the reference speed by applying a further lower limit and a further upper limit to the raw reference speed to define the reference speed.

7. The method of claim 6 further comprising determining the reference speed by applying a lower slew limit and an upper slew limit to the raw reference speed to define the reference speed.

8. The method of claim 7 wherein the lower slew limit is determined in response to a measured acceleration minus an uncertainty value.

9. The method of claim 7 wherein the upper slew limit is determined in response to a measured acceleration plus an uncertainty value.

10. The method of claim 1 wherein said determining operating dynamics includes:

obtaining a plurality of sampled speed values from said speed axle;

determining a degree of uncertainty in said plurality of sampled speed values; and

determining an operating mode of the vehicle in response to said degree of uncertainty.

11. The method of claim 10 wherein:

said determining a degree of uncertainty includes determining a rate of change in acceleration between sampled speed values, said rate of change in acceleration being indicative of jerk on said speed axle;

setting said operating mode to a wide mode if said jerk exceeds an upper limit.

12. The method of claim 11 further comprising:

setting said operating mode to a narrow mode if said jerk is less than a lower limit.

13. The method of claim 10 further comprising:

obtaining said derived speed signal based on extrapolation between said sampled speed values;

determining a first correction based on a relationship between said measured speed signal and said derived speed signal; and

setting said operating mode in response to said first correction.

14. The method of claim 13 further comprising:

setting said operating mode to a wide mode if said first correction exceeds an upper limit.

15. The method of claim 13 further comprising:

setting said operating mode to a narrow mode if said first correction is less than a lower limit.

16. The method of claim 10 further comprising:

obtaining said derived speed signal based on extrapolation between said sampled speed values;

determining a second correction based on a relationship between said extrapolation and one of said sampled speed values; and

setting said operating mode in response to said second correction.

17. The method of claim 16 wherein:

setting said operating mode to a wide mode if said second correction exceeds an upper limit.

18. The method of claim 16 further comprising:

setting said operating mode to a narrow mode if said second correction is less than a lower limit.

19. The method of claim 1 wherein said calculating a creep value for said speed axle includes:

determining a torque limit based on a percentage of operating torque;

obtaining a pre-sample of speed and torque from said speed axle;

ramping torque to the speed axle down to the torque limit;

holding the torque at the torque limit for a time period;

obtaining a sample of speed and torque from said speed axle;

ramping the torque to the speed axle up to operating torque;

obtaining a post-sample of speed and torque from said speed axle; and,

determining an adhesion creep curve for the speed axle in response to pre-sample speed and torque, sampled speed and torque and post-sample speed and torque.

20. The method of claim 1 wherein said determining said derived speed includes:

periodically reducing torque to said speed axle and sampling speed of said speed axle;

adjusting the period between said sampling in response to one of creep, speed and tractive effort for said speed axle.

21. The method of claim 20 wherein:

a time period between said sampling is reduced if a change in a number of axles in a slip condition exceeds a limit.

22. The method of claim 20 wherein:

a time period between said sampling is reduced if a change in creep exceeds a limit.

23. The method of claim 20 wherein:

a time period between said sampling is reduced if a change in tractive effort exceeds a limit.

24. The method of claim 1 wherein determining said derived speed includes:

periodically reducing torque to said speed axle and obtaining a plurality of sampled speed values;

extrapolating between said sampled speed values to obtain said derived speed; and,

determining a reference speed based on one of said measured speed and said derived speed.

25. The method of claim 24 wherein:

said determining a reference speed is based on said measured signal if said measured speed is less than said derived speed.

26. A method of limiting torque to an axle of a vehicle having a plurality of axles, the method comprising:

selecting one of said axles as a designated axle;

comparing jerk on said designated axle to a threshold and generating a first torque limit in response to said comparing;

determining a second torque limit based on torque on an axle other than said designated axle; and,

applying as a torque limit on said designated axle one of said first torque limit and said second torque limit.

27. The method of claim 26 wherein:

said torque limit is the lesser of the first torque limit and the second torque limit.

28. The method of claim 26 wherein:

said second torque limit is based on an axle, other than said designated axle, having a maximum torque.

29. The method of claim 28 wherein:

said second torque limit is equal to said maximum torque multiplied by a first factor.

30. The method of claim 26 wherein:

said second torque limit is based on an axle, other than said designated axle having, a minimum torque.

31. The method of claim 30 wherein:

said second torque limit is equal to said minimum torque multiplied by a second factor.

32. A vehicle control system for determining a reference speed approximating a ground speed of a vehicle having a plurality of powered axles each having at least one wheel which is subject to creep relative to the ground as the vehicle is propelled, the system comprising:

a plurality of speed sensors, each speed sensor associated with one of the axles;

a plurality of motors, each motor associated with one of the axles;

a controller in communication with said speed sensors and said motor, said controller including a storage medium including instructions for causing said controller to implement a control process including:

selecting a measured speed indicative of the vehicle speed from the axle of said plurality of axles having the lowest speed;

determining the axle of said plurality of axles having a predetermined amount of creep and designating said axle as a speed axle;

determining a derived speed for said speed axle;

calculating a creep value for said speed axle;

compensating said derived speed by subtracting a creep value from said derived speed to obtain a corrected speed indicative of the vehicle speed;

determining operating dynamics for the vehicle; and

generating the reference speed based on one of said measured speed or said corrected speed, in response to said operating dynamics.

33. The system of claim 32 wherein the creep value is determined based on a change in torque on the speed axle.

34. The system of claim 32 wherein the creep value is limited to a selected value.

35. The system of claim 32 wherein said generating the reference speed includes selecting one of said measured speed and said corrected speed to define an adjusted speed, said reference speed being determined based on the adjusted speed.

36. The system of claim 35 wherein said control process further includes determining a raw reference speed by applying a lower limit and an upper limit to the adjusted speed to define a raw reference speed.

37. The system of claim 36 wherein said control process further includes determining the reference speed by applying a further lower limit and a further upper limit to the raw reference speed to define the reference speed.

38. The system of claim 37 wherein said control process further includes determining the reference speed by applying a lower slew limit and an upper slew limit to the raw reference speed to define the reference speed.

39. The system of claim 38 wherein the lower slew limit is determined in response to a measured acceleration minus an uncertainty value.

40. The system of claim 38 wherein the upper slew limit is determined in response to a measured acceleration plus an uncertainty value.

41. The system of claim 32 wherein said determining operating dynamics includes:

obtaining a plurality of sampled speed values from said speed axle;

determining a degree of uncertainty in said plurality of sampled speed values; and

determining an operating mode of the vehicle in response to said degree of uncertainty.

42. The system of claim 41 wherein:

said determining a degree of uncertainty includes determining a rate of change in acceleration between sampled speed values, said rate of change in acceleration being indicative of jerk on said speed axle;

wherein said control process further includes setting said operating mode to a wide mode if said jerk exceeds an upper limit.

43. The system of claim 42 wherein said control process further includes:

setting said operating mode to a narrow mode if said jerk is less than a lower limit.

44. The system of claim 41 wherein said control process further includes:

obtaining said derived speed signal based on extrapolation between said sampled speed values;

determining a first correction based on a relationship between said measured speed signal and said derived speed signal; and

setting said operating mode in response to said first correction.

45. The system of claim 44 wherein said control process further includes:

setting said operating mode to a wide mode if said first correction exceeds an upper limit.

46. The system of claim 44 wherein said control process further includes:

setting said operating mode to a narrow mode if said first correction is less than a lower limit.

47. The system of claim 41 wherein said control process further includes:

obtaining said derived speed signal based on extrapolation between said sampled speed values;

determining a second correction based on a relationship between said extrapolation and one of said sampled speed values; and

setting said operating mode in response to said second correction.

48. The system of claim 47 wherein said control process further includes:

setting said operating mode to a wide mode if said second correction exceeds an upper limit.

49. The system of claim 47 wherein said control process further includes:

setting said operating mode to a narrow mode if said second correction is less than a lower limit.

50. The system of claim 32 wherein said calculating a creep value for said speed axle includes:

determining a torque limit based on a percentage of operating torque;

obtaining a pre-sample of speed and torque from said speed axle;

ramping torque to the speed axle down to the torque limit;

holding the torque at the torque limit for a time period;

obtaining a sample of speed and torque from said speed axle;

ramping the torque to the speed axle up to operating torque;

obtaining a post-sample of speed and torque from said speed axle; and,

determining an adhesion creep curve for the speed axle in response to pre-sample speed and torque, sampled speed and torque and post-sample speed and torque.

51. The system of claim 32 wherein said determining said derived speed includes:

periodically reducing torque to said speed axle and sampling speed of said speed axle;

adjusting the period between said sampling in response to one of creep, speed and tractive effort for said speed axle.

52. The system of claim 51 wherein:

a time period between said sampling is reduced if a change in a number of axles in a slip condition exceeds a limit.

53. The system of claim 51 wherein:

a time period between said sampling is reduced if a change in creep exceeds a limit.

54. The system of claim 51 wherein:

a time period between said sampling is reduced if a change in tractive effort exceeds a limit.

55. The system of claim 32 wherein determining said derived speed includes:

periodically reducing torque to said speed axle and obtaining a plurality of sampled speed values;

extrapolating between said sampled speed values to obtain said derived speed; and,

determining a reference speed based on one of said measured speed and said derived speed.

56. The system of claim 55 wherein:

said determining a reference speed is based on said measured signal if said measured speed is less than said derived speed.

57. A vehicle control system for limiting torque to an axle of a vehicle having a plurality of powered axles, the system comprising:

a plurality of speed sensors, each speed sensor associated with one of the axles;

a plurality of motors, each motor associated with one of the axles;

a controller in communication with said speed sensors and said motor, said controller including a storage medium including instructions for causing said controller to implement a control process including:

selecting one of said axles as a designated axle;

comparing jerk on said designated axle to a threshold and generating a first torque limit in response to said comparing;

determining a second torque limit based on torque on an axle other than said designated axle; and,

applying as a torque limit on said designated axle one of said first torque limit and said second torque limit.

58. The system of claim 57 wherein:

said torque limit is the lesser of the first torque limit and the second torque limit.

59. The system of claim 57 wherein:

said second torque limit is based on an axle, other than said designated axle, having a maximum torque.

60. The system of claim 59 wherein:

said second torque limit is equal to said maximum torque multiplied by a first factor.

61. The system of claim 57 wherein:

said second torque limit is based on an axle, other than said designated axle having, a minimum torque.

62. The system of claim 61 wherein:

said second torque limit is equal to said minimum torque multiplied by a second factor.